

Literature Review of Cluster Programs

Agricultural land within the State of Wisconsin and Dane County is being converted to other land uses at an exponential rate. In Dane County, approximately 95,000 acres of crop and pasture land were converted to other land uses from 1980-2000 (CARPC, 2009). The City of Fitchburg has taken a proactive approach in the preservation of farmland by adopting a long-term growth boundary for urban service expansion and the Rural Residential Development Criteria in limiting the number of houses outside of the current urban service area.

Another program that is being used by an increasing number of counties and cities to preserve the rural character is the use of clustered development. Cluster development preserves a certain percentage of a parcel as open space, while placing development on smaller lots grouped together (Corser, 1994).

Other definitions of rural cluster include:

- A residential site design and zoning technique used to protect natural, cultural or recreational features of the landscape while allowing new development. Cluster development places a greater emphasis on protecting open space and typically applies only to residential units (WI DNR)
- Residential lots grouped together on a portion of a property being subdivided with the remaining area placed into a permanent preservation parcel. Cluster lots with individual private septic systems must range in size between 40,000 to 50,000 square feet and cluster lots which use a shared community septic system must have a minimum lot size of 33,000 square feet (Howard County, Maryland, 2004)

Cluster development may also be termed open-space development, conservation development, hamlet style, farm village or other unique names coined by proponents or developers.

Why it Works

Clustering allows flexibility in layout so that a developer can avoid impacting important wildlife habitat areas or scenic features of the rural landscape, such as large rock formations, hill crests, and high quality agricultural land.

Developers sometimes experience cheaper development costs involving the construction of roads and water/sewer infrastructure. Developers are able to advertise the project as “a community that will be forever surrounded by acres of preserved farmland, open fields and woodlands.”

Defining Rural Character

To evaluate the effectiveness of cluster development as a tool to preserve rural character, one must define rural character (American Planning Association, 1994). Citizens of the community need to characterize what they enjoy about the rural community and tailor a cluster program around preserving these features. The public outreach should give a detailed analysis of the specific qualities, patterns and spatial relationships that give the area its unique, essential qualities. The rural community’s overall goals and objectives for open space preservation and

provision of housing types need to be consistent with what is described in the Comprehensive Plan. Examples of characterizations:

- Mixtures of farms, forests, undeveloped open space, clean waterways, wildlife, low-density housing, and the absence of suburban amenities, such as streetlights and sidewalks.
- Open space, farming and logging, wildlife/farm animals, distance from cities, low-density housing, small population, few expensive/new buildings, slow pace of life, no interstate highway access, a feeling of safety, and country fresh air and water.
- Wooded areas, low-density residences, ravines and bluffs, the river and farms.

Purpose/Intent

Two purposes for rural cluster zoning are commonly given in cluster ordinances: to allow residential development in rural areas and to protect open space suitable for agriculture or environmental protection (Pivo et al, 1990). The intent is that both purposes can be achieved on the same parcel.

The following examples are typical statements of purpose:

- To allow single-family dwellings to be clustered together in areas of non-prime agriculture farmland in a manner that prime agricultural farmland, woodland, and unique natural amenities would be preserved (Rochester-Olmstead County, MN)
- To provide... a compatible mixture of agricultural uses and low-density residential development, to promote agriculture, and to protect scenic and environmentally sensitive areas. (Montgomery County, MD)
- To encourage the preservation of agricultural lands for continuing and enhanced production through use of a variety of techniques. One technique is clustering instead of dispersal of units on larger parcels. (San Luis Obispo County, CA).
- The purpose of the rural cluster development regulations is to encourage the preservation of the rural and scenic quality of the landscape and farmland while allowing attractive low density clustered residential development. Cluster development is to be permitted only when it is located and designed to minimize adverse impacts on agricultural land, surrounding farming operations, sensitive environmental features and the intended use of the proposed preservation parcels for the cluster. Regulations allow site planning flexibility and require cluster development proposals be evaluated in terms of their effectiveness to minimize disturbance of existing topography, vegetation, and the rural landscape (Howard County, Maryland, 2004).

To accomplish these goals laid out in the purpose/intent, the regulations of the ordinance need to allow for flexibility in site planning and require cluster development proposals be evaluated in terms of their effectiveness to minimize disturbance of existing topography, vegetation and the rural landscape (Pivo et al, 1990).

Layout, Rules and Standards

To be workable and legally defensible, a cluster ordinance must set out rules and standards that can be applied to proposed developments (Pivo et al, 1990). An ordinance should contain, at minimum, provisions that set out:

1. Application procedures;

2. A statement of minimum parcel size, natural features or other qualifying parcel characteristics necessary for allowing the use of the cluster approach;
3. A method or calculation for determining the allowable number of dwellings;
4. Infrastructure requirements for roads and provision of water, sewer, and other utilities.
5. Permitted types of dwellings and design standards, if any;
6. Criteria for establishing dimensions of lots, setbacks, and road frontages; and
7. Perhaps most importantly, specific criteria addressing the location, amount, and use of open space on the parcel, as well as permitted methods for open space ownership and maintenance. (For instance, whether the land and/or development rights are owned in conjunction by all the landowners, within specific lots in the name of individual owners or altogether deeded to another party, such as the town.)

The layout of the City of Chesapeake, VA's cluster ordinance includes:

- Permitted Uses
- Density
- Minimum lot size
- Maximum building envelope size
- Maximum total lot disturbance
- Maximum total tract disturbance for public improvements including streets and stormwater management facilities
- Minimum spacing between building envelopes and tract boundary
- Minimum spacing between building envelopes and off-site public street
- No building envelope should be placed closer than five feet to any lot line
- Minimum spacing of building envelope from on-site public streets
- Minimum setback of building envelope from lakes or ponds
- Lot frontage

Preservation

(Howard County, Maryland, 2004), (American Planning Association, 1994), (Chesapeake, Virginia), (Pivo et al, 1990)

The intended function of the preservation parcel, whether it is farming, environmental conservation or recreation, is a critical determinant of the design of each cluster development. The open space must be large enough for agriculture, forestry, or the preservation of environmental resources. The requirement thus must be based on the minimum parcel size needed for these processes to continue. It is important that the open space in a cluster development be preserved for a specific purpose, instead of becoming a static vacant lot.

Preservation Parcels –

Agricultural – Parcel should be as large as possible and separated from the cluster lots by a significant buffer.

Environmental – Properties with environmentally sensitive areas or natural amenities (floodplain, wetlands, streams, steep slopes, forested areas, etc.) should be designed with special

consideration given to protecting these natural resources by locating them within the preservation parcel.

Recreation – Preservation parcels can be designed to create a green space amenity for cluster development by establishing an accessible, continuous and functional pattern of green space. The parcel layout should consider potential recreational uses, both active and passive for the cluster development residents.

Protection of the preservation parcel must have an easement recorded in the Register of Deeds Office. The easement document describes the prohibitions against further subdivision and development and the provisions for maintenance of the preservation parcel. Deed restrictions may also be used on larger lots to restrict against further subdivision.

Permitted uses on preservation parcels may include farming, conservation and wildlife areas, one single-family detached dwelling unit on one of the preserved parcels for a cluster, commercial feed mills and grain processing facilities, private outdoor recreational facilities for the cluster development residents, government uses limited to schools, conservation areas, parks, and recreation facilities, seasonal sale of Christmas trees, farmers markets and utilities.

Conditional use on preservation parcels may include agri-businesses, country clubs/golf courses, farm tenant houses, and riding academies and stables.

Maintenance of the open space is dependent on the usage. If the open space is used for recreation, upkeep is typically handled by the homeowners' association, to which everyone is contractually obligated to contribute when they purchase a home. Home buyers sign a legally enforceable agreement which enables the homeowners' association to collect any unpaid dues.

If the open space is agricultural, there are several options. The agricultural open space can be sold "in fee" to the homeowners' association, which can in turn lease the land to local farmers. Or, the original farmer can retain ownership of it and sell only the "development rights." The second option lets the farmer retain his land and sell his land to a young or expanding farmer.

Open space in cluster projects often remains unused when not properly designed for its intended use. If the goal of clustering is to protect agriculture and other open space activities, cluster ordinances must protect the sensitive land that these activities require. Critical characteristics can include slope, access, wetlands, drainage aquifers, visibility, floodplain, land area, soil types, parcel shape, solar access, and separation from nearby residential areas.

Ordinances set a minimum standard for the amount of open space that must be provided. This standard is almost always given as a percentage of the site area – ranging from 10 to 97 percent, with 60 percent as typical. But with a percentage standard, the size of the open space reserve depends on the size of the project. The result can be open spaces that are too small for their intended uses. In addition, an arbitrarily large percentage that seriously infringes on otherwise allowable densities can create the basis for taking and due process claims.

Some ordinances use a minimum acreage standard for open space ranging from 25 to 40 acres. Yet a performance standard should be used, such as the median farm size in the region, county, or town, the minimum viable economic unit for agriculture, or the minimum viable ecological unit for wildlife habitat.

Ordinances should describe the type of land that should be preserved.

- The design of open space should show consideration for habitats by leaving open large single blocks of land...(Fort Collins, CO)
- Open space should be appropriately located with respect to permitted uses (Loudon Co., VA).
- The greatest amount of prime agriculture land shall be preserved and in such a way as to ensure continuing feasibility of agriculture and forestry (Rochester-Olmstead Co., MN).

Open space needs to have a conservation easement, restrictive covenants or an established method of open space administration. Management plans for the open space will need to be set up with a homeowners association.

House Lots

A cluster subdivision generally sites houses on smaller parcels of land, while the additional land that would have been allocated to individual lots is converted to common shared open space for the subdivision. Minimum lot sizes, in many cases are limited by lot size requirements for on-site septic systems set by health standards. Lot sizes can be reduced by using community septic systems or by locating individual septic systems outside the lot within the preserved open space. Smaller lots would be advantageous in areas that may become urbanized (American Planning Association, 1994).

The city's Rural Cluster Program should include a requirement for average lot sizes to be less than one acre, since one acre lots are currently what the City is striving for under the Rural Residential Development Criteria. The acreage saved by reducing lots sizes from one acre could then become a community open space for the residents or as farmland. Lots sizes less than one acre would require the City to amend their zoning code to allow unsewered lots less than one acre or require all rural clusters to use community septic systems.

Another option communities use to maintain rural character is define a building envelope within lots. This allows community officials and developers to stagger buildings on lots, so they do not mimic the design of typical subdivisions. Building envelopes should avoid open fields or minimize the visual impact with a preserved or restored natural buffer. In addition, they should be located on the edges of fields and in wooded areas to minimize the visual impact of development (Chesapeake, Virginia).

The number of home sites per cluster area should be limited. Within the cluster, there should be a minimum and maximum number of home sites, a cluster core and access corridor to accommodate vehicles, utilities, and commonly owned facilities and a pathway to the project open space system. Cluster areas should be visually and physically separated from one another and roadways by open space buffers.

It is not unusual for traditional farms to group five to six buildings together around a central farmyard or for a similar number of farmhouses to be grouped around a crossroads. When the number of homes in a cluster development grows too large, however, the cluster development becomes more similar to a suburban subdivision than to a rural group of buildings. Regulating ordinances limit the number of home sites in a rural cluster development.

Each cluster area should also contain an interior common area that provides vehicular access to the home sites and common land for a community leach field, small public water supply, or other necessary facilities.

Roads

The City's Land Division Ordinance sets the minimum street design standards for public streets. The roadways within cluster developments should follow existing contours to minimize the extent of cuts and fills. Where sites include linear features such as existing access roads, tree lines and stone rows, roadways should follow these features to minimize their visual impact. Roadways should be buffered by existing or restored natural features to minimize visual impact. Swales are the preferred method of providing stormwater management within cluster developments.

Driveways

The number of driveways accessing off-site public streets should be kept to a minimum. Where lots will access an off-site public street, common driveways should be used where appropriate to minimize the number of access points required. All lots using common driveways should provide a common driveway maintenance agreement to be approved by the Planning Department.

Some communities place further guidelines for driveways. This includes limiting the common driveway width to 12-feet with two-foot graded and stoned shoulders, making hard surfaced paving a requirement in areas where driveway grades are in excess of six percent, and capping the maximum length of common driveways based on the Planning Department and Fire Department review with possible turnouts. All driveway areas should be included in the total lot disturbance calculation for the lot on which the site is located.

The City of Fitchburg has established guidelines for driveways within Chapter 25 – Streets and Public Ways, dictating the location of access points from controlled access highways, limiting the length of driveways to 300 feet unless such driveway is at least 20 feet in width, has an all weather surface and has an approved fire department turn around. If the driveway serves more than two separate dwelling structures, or two or more commercial buildings under separate ownership, it shall be classified as a private roadway and subject to the requirements of at least 24 feet in width, and constructed with either standard concrete curb and gutter or concrete ribbon curb and gutter.

Water and Sewage Issues

The size, location, and design of the clustered lots and the number of home sites are influenced by rural water supply and sewage disposal requirements. A benefit of cluster development is that it provides flexibility to locate wells and septic systems within the site's most suitable soils.

Community wells are often preferred because they can be located in the open space away from septic systems, mitigating the chronic problem of rural well contamination (American Planning Association, 1994). In such cases, farm activities in the open space must be restricted within the wellhead protection radius. Individual on-site wells and septic systems in cluster projects are more problematic, because as the lots shrink in size, the systems are in closer together, increasing contamination potential.

Septic systems can also be installed as a community system rather than on individual lots. Either type of system, however, has the disadvantage of concentrating effluent over a smaller portion of the property than with traditional large lots.

Regulations of septic systems are controlled by Dane County; however there may be limitations on the number of lots/bedrooms depending on the load capacity of the community septic system.

Stormwater Management

The Rural Cluster development would be required, at minimum, to follow the City's Stormwater Management performance standards as outlined in Chapter 27 of the City's ordinances.

Some suggestions from other programs include retaining existing natural drainage ways, stormwater basins resembling natural ponds to the maximum extent possible and meandering through the development as a greenbelt rather than a single structure and requiring landscape plans that contain native species and enhance wildlife habitats.

Splits (Rights to develop a lot)

(American Planning Association, 1994), (Howard County, Maryland, 2004)

A few programs allow for density/cluster exchange, which allows landowners in the rural areas the opportunity and incentive to preserve significant areas of farmland in the rural area. This process is also intended to encourage the clustering of residential development in areas where development will not have an adverse impact on farm operations, but also not affecting the natural resources. To accomplish these goals, the program allows residential density in the rural areas to be transferred between parcels.

The negotiations for the purchase and sale of development density rights take place privately between the property owner and developer (or other property owner). A preservation easement for each sending parcel must be recorded concurrent with the final plat for the receiving parcel.

The potential to develop in the rural area in the City of Fitchburg is based on one lot for every 35 acres, utilizing 1979 as the base year. In order for the rural cluster program to work and give rural landowners potential to use their splits, a transfer of splits will need to occur, similar to the density/cluster exchange program.

Based off of the density/cluster exchange program, criteria will need to be established to transfer splits:

Sending Parcels (Splits)

- Minimum preservation easement areas – (Fitchburg, 1 in 35 acres?).
- The property must not be subject to any recorded easement or other agreement which restricts its development
- Transferred at maximum rate (Fitchburg, 1 du per 35 acres as defined in RRDC?).
- Agricultural Land Preservation Program easements on sending parcels must encumber the entire property at the time the initial easement is recorded.
- A preservation rate needs to be established for every dwelling unit developed

Receiving Parcels (Splits)

- The lot or parcel must not be subject to any recorded conservation easement or other agreement which restricts its development.
- Density of area (Minimum lot sizes; less than one acre?).
- Percentage of dedicated open space to City or homeowners association (Excess acreage saved by developing lots below 1 acre / 1.5 acres / 5 acres?).

Policy also needs to be established deciding when actual transfers need to be purchased or if contingent offers will be allowed until development occurs on the lot.

Permits

One reason that local land use decision makers issue few permits for cluster developments is that cluster permitting procedures are more complex and involve greater risk than traditional review process. Developers/landowners prefer predictability.

Identification of lands that are suitable and unsuitable for cluster development might involve three steps:

1. Review of open space plan of a jurisdiction, considering both lands of local and regional importance. Lands that are planned for open space are good candidates for the siting of cluster developments. The open space provisions of cluster developments can be the tool used in preserving a large tract of land.
2. Identify lands not in an open space plan, but are sensitive environmental and cultural features or the presence of safety hazards...flood plains, steep slopes.
3. Parcels identified as suitable for cluster development can accommodate higher net densities in a cluster development pattern. Environmental analysis should investigate soils, steep slopes, wetlands, wildlife habitats, and hydrological systems to determine which areas can accommodate cluster development without harmful impacts.

Locations may be pre-selected by the policy makers that set out specific guidelines of each site area. This will give certainty to developers in knowing what is required by the City.

Standards should be established for minimum and maximum project size so projects are large enough to support viable open spaces but small enough to prevent the residential cluster development from overwhelming the surrounding area.

Each project should be large enough to support viable and autonomous agricultural or other open space uses. Majority of ordinances contained a minimum project size ranging from six to 30 acres. The minimum area necessary to support open space uses that are compatible with the surrounding district should be established first (this approach will also avoid claims that open space set-aside is derived in an arbitrary and capricious manner). The minimum project size should then be based on the percentage of each project that will be preserved as open space.

Additional Guidelines

(American Planning Association, 1994), (Chesapeake, Virginia), (Pivo et al, 1990)

Lot dimension, building heights, and setbacks should be compatible with rural character and provide the privacy, seclusion and access to open space that is normally expected in rural areas. Historic type architecture or earth tone colors may also be requirements laid out within cluster developments.

The studies of the rural cluster housing programs recommend that various types of buffering be required. To minimize visual impact of clustered homes from public right-of-ways, vegetated buffers with native species should be used. Buffers or setbacks between homes and farm operations are also recommended to reduce conflicts.

Standards need to be set that are appropriate for rural setting and not suburban development.

Landscaping and Lawns – Existing vegetation should be preserved in areas where disturbance is not necessary outside the building envelope or capping the creation of lawn areas in excess of 10,000 square feet.

Accessory Buildings and Structures – Accessory buildings should be located within the building envelope areas or in designated areas, which will not impact the rural landscape. Accessory buildings should be kept within a reasonable size and resemble rural architect.

Existing Structures – When an area contains existing structures deemed to be of historic or architectural significance and where these structures are suitable for rehabilitation, the structures should be retained and worked into the rural cluster design. Reuse of the rehabilitated existing structures for residential use or permitted accessory residential uses should be permitted.

Disadvantages

The disadvantages of cluster development, from the developer's perspective, is that it may sometimes be less profitable than conventional development, the demand for small lots in the rural areas, and the time delay for projects getting approved.

From the public's perspective, the availability of small lots may attract more urbanites to the rural area, which in turn can put pressure on agricultural activities and environmental resources and add to the public cost of providing services (American Planning Association, 1994).

A Seattle Post News article states residents in Snohomish County are unhappy with rural cluster developments. Residents have complained that the denser subdivisions, often of luxury homes, plopped in the middle of nowhere are out of character with their once-rural landscapes

The residents have stated they support cluster in concept, but not if it creates islands of what they see as inappropriate urban development.

The County Officials are currently looking at landscaping requirements and wider buffers to visually screen the developments from rural roads and surrounding properties. They are also proposing to reduce the number of homes allowed in a single cluster from 30 to 13.

Another potential issue is rural clustering could conflict with, rather than protect agricultural uses. This suggests that rural clustering may make more sense as an alternative to large-lot (one to 10 acres) zoning in transitional areas where residential development is already displacing major commercial farming and forestry operations (Pivo et al, 1990).

Jurisdictions should be careful not to encourage residential development through introduction of the cluster option in areas planned for large-scale agriculture. Cluster developments should be introduced only in areas planned for residential subdivisions.

Conclusion

Overall, cluster developments can help preserve large tracts of agricultural or open space lands by grouping individual homes together. Communities have to tailor their cluster ordinances to the goals they see within the rural area. The number of lots allowed within clusters must also be set at a level such that the total population of rural residents does not threaten rural processes and create excessive demands for urban levels of service.

Cluster developments will not preserve the rural landscape as it currently exists; however it may limit the number of large parcels fragmented each time a new lot is created under the current policy.

It should be stressed that this literature review does not layout mandatory policy guidelines for a rural cluster program, but offers assistance and information to policy makers in making decisions as a rural cluster program is developed.

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